# **ASSA ABLOY SL500 ECODOOR NARROW STILE**

ASSA ABLOY ENTRANCE SYSTEMS



The ASSA ABLOY EcoDoor narrow stile automatic sliding door system is suitable for low traffic to high pedestrian traffic flow. The door system is available with a variety of configurations and features to help you meet your sustainability goals. Whether air infiltration reduction, energy consumption savings, improved customer comfort or compliance with energy codes such as ASHRAE 90.



ASSA ABLOY is committed to providing products and services that are environmentally sound throughout the entire production process and the product lifecycle. Our unconditional aim is to make sustainability a central part of our business philosophy and culture, but even more important is the job of integrating sustainability into our business strategy. The employment of EPDs will help architects, designers and LEED-APs select environmentally preferable door openings. ASSA ABLOY will continue our efforts to protect the environment and health of our customers/end users and will utilize the EPD as one means to document those efforts.



## **ENVIRONMENTAL** PRODUCT DECLARATION



#### ASSA ABLOY Entrance Systems ASSA ABLOY SL500 EcoDoor narrow stile

#### According to EN 15804 and ISO 14025 Dual Recognition by UL Environment and Institut Bauen und Umwelt e.V.

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. <u>Exclusions</u>: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. <u>Accuracy of Results</u>: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimations and are either not comparable or have limited comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability environmental limpacts. EPDs form different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs form different programs may not be comparable.



PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	ASSA ABLOY Entrance Systems US Inc
ULE DECLARATION NUMBER	4786545067.159.1
IBU DECLARATION NUMBER	EPD-ASA-20180085-IBC1-EN
DECLARED PRODUCT	ASSA ABLOY EcoDoor narrow stile
REFERENCE PCR	PCR Automatic doors, automatic gates, and revolving door systems (door systems Version 1.5 (04.2017)
DATE OF ISSUE	June 22, 2018
PERIOD OF VALIDITY	5 years
SCOPE	This EPD is Manufacturer Declaration (1a) – Declaration of a specific product from a manufacturer's plant. The owner of the declaration shall be liable for the underlying information and evidence.
	Product definition
	Information about basic material and the material's origin
CONTENTS OF THE	Description of the product's manufacture
DECLARATION	Indication of product processing
	Life cycle assessment results
	Testing results and verifications

The PCR review was conducted by:	IBU – Institut Bauen und Umwelt e.V.	
	PCR was approved by the Independent Expert Committee-Dr. Wolfram Trinius appointed by SVA)	
The CEN Norm EN 15804 serves as the core PCR. This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories	Grant R. Martin	
	Grant R. Martin, UL Environment	
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	IBU – Institut Bauen und Umwelt e.V.	

## Environment



### 1. General Information

# ASSA ABLOY Entrance Systems US Inc

#### **Program holder**

IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany

#### Declaration number

EPD-ASA-20180085-IBC1-EN

## This Declaration is based on the Product Category Rules:

IBU: PCR Automatic doors, automatic gates and revolving door systems (door systems) version 1.5 (04.2017) (PCR tested and approved by the independent expert committee)

#### Issue date

22.06.2018

### Valid to

21.06.2023

leman

Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)

Dr.-Ing. Burkhart Lehmannt (Managing Director IBU)

### 2. Product

#### 2.1 Product description

Product name: ASSA ABLOY SL500 EcoDoor narrow stile.

**Product characteristic:** Automatic sliding door system.

ASSA ABLOY Entrance Systems EcoDoor sliding systems are suitable for low traffic to high pedestrian traffic flow. The sliding door systems are available in several configurations and designs, depending on application and facility requirements.

The system consists of a support structure, door leaves with foam, glazed glass, automatic door operator and safety units.

Automatic sliding door systems are made mainly of aluminum, steel and glass. The main function of the narrow stile door packages is to match the existing appearance of the building/storefront.

#### ASSA ABLOY SL500 EcoDoor narrow stile

#### **Owner of the Declaration**

ASSA ABLOY Entrance Systems US Inc 1900 Airport Road Monroe, NC 28110 United States

#### Declared product / Declared unit

This declaration represents 1 automatic sliding door system ASSA ABLOY SL500 EcoDoor narrow stile consisting of 2 active door leaves with frame height (79"/[2.0 m]), frame width (48"/[1.2 m]) and (1"/[25 mm]) insulated tempered glass and 2 stationary doors with frame height (83"/[ 2.1 m]), frame width (48"/[1.2 m]) and (1"/[25 mm]) insulated tempered glass.

#### Scope:

This declaration and its LCA study is relevant to the ASSA ABLOY SL500 EcoDoor narrow stile. - The final assembly and production stage occurs in Monroe NC, USA at 1900 Airport Road. Components are sourced from international tier one suppliers. ASSA ABLOY SL500 EcoDoor narrow stile sizes vary according to project requirements. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

#### Verification

The CEN Standard EN 15804 serves as the core PCR			
Independent verification of the declaration and data according to ISO 14025			
	internally	х	externally
WING			
Dr. Wolfram Triniu	us er appointed by S'		

The ASSA ABLOY SL500 EcoDoor narrow stile system can be provided with optional 25 mm glass stops to accept insulated glass.

The ASSA ABLOY SL500 EcoDoor narrow stile has been designed to meet all operational and safety requirements in the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) and Underwriters Laboratories (UL).

The standards that can be applied for ASSA ABLOY SL500 EcoDoor narrow stile are:

## ANSI/BHMA A156.10 Power Operated Pedestrian Doors

UL 325 ANSI/CAN/UL Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems UL 60730 UL Standard for Safety Automatic Electrical Controls

NFPA 79 Electrical Standard for Industrial Machinery AHSRAE 90.1 ANSI/ASHRAE/IES Standard 90.1-2016 -- Energy Standard for Buildings Except Low-Rise Residential Buildings

#### 2.2 Application

The ASSA ABLOY SL500 EcoDoor narrow stile is an automatic sliding door system suitable for high traffic use. It combines convenience, safety and dependability to maximize performance along its life cycle. The door system is designed to minimize unwanted air infiltration, improve the indoor climate and ensure safe and convenient entry and exit for all-regardless of age and physical capabilities.

The SL500 Ecodoor narrow style finds its use inoutdoor applications in retail, transportation, healthcare, manufacturing, public sector, etc. where pedestrian safety is of high concern.

The system is designed to handle changing weather conditions and environmental variations.

#### 2.3 Technical Data

The table presents the technical properties of the SL500 EcoDoor narrow stile:

#### Technical data

Name	Value	Unit
Heat transfer coefficient		W/(m <sup>2</sup> K)
of the entire door or gate	0,64	
system		
Power input "Standby"	40	W
Power input "Idle"	40	W
Power input "Operation"	71	W

#### Features

Max size door leaf (bi-parting): (DW x DH) 1230 x 2100 mm (larger sizes available on request) Clear opening: Bi-parting: SL500-2: 920– 2125 mm Clear opening: Single Slide: SL500-R/L: 900 – 1200 mm Door leaf thickness: 48 mm Door leaf material: glass and aluminum Profile type: - aluminum Profile finish: - Clear and Dark Bronze - Painted finished available

Glass type: - 6.35, 16 or 25 mm tempered glass

#### Performance

Mains power supply: 100 V AC -10% to 240 V AC +10%, 50/60 Hz, fuse 10 AT (building installation) Power consumption: Max 250 W Auxiliary voltage: 24 V DC, 1 A

On door package (as shown in the table) 'standby' means the door is operational and will open/close once someone enters the door, 'idle' means the door is locked but there is still power to the electronics and 'off' means the doors will not move automatically (can move doors manually) but there is still power to the electronics.

Opening/closing speed: SL500: Variable up to approx. 1.4 m/s (SL500-2) Hold open time: 0-60 s

Recommended max.door weight: Bi-parting without break-out: SL500-2: 200 kg/leaf Recommended max.door weight: Single Slide without break-out: SL500-R/L 240 kg For low energy movement: 150 kg/leaf

Ambient temperature: -20 °C to +50 °C

#### 2.4 Delivery status

The ASSA ABLOY SL500 EcoDoor narrow stile is delivered ready for installation.

#### 2.5 Base materials / Ancillary materials

The composition for ASSA ABLOY SL500 EcoDoor narrow stile is as following:

Component	Percentage in mass (%)
Aluminum	14.17
Brass	0.00
Plastics	0.75
Steel	54.85
Glass	29.28
Electro-mechanics	0.87
Others	0.08
Total	100

#### 2.6 Manufacture

Profiles are provided by Tier-1 supplier located in Fonda NY and are delivered to the factory in Monroe, NC USA. The profiles are machined. The products are surface treated; either anodized (externally), powder coated (externally) or Kynar (externally). Other parts as electronics, brackets, etc. arrives from tier-1 suppliers or a factory overseas then a basic assembly is done in Monroe. The door system components are encased in cardboard and forwarded to on-site installation.

## 2.7 Environment and health during manufacturing

ASSA ABLOY Entrance Systems US Inc. is committed to producing and distributing door opening solutions with no environmental impact, where health & safety is the primary focus for all employees and associates. • Environmental operations, GHG, energy, water, waste, VOC, surface treatment and H&S are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and the effectiveness of Environment Management program is evaluated. · Code of Conduct covers human rights, labor practices and decent work. The Management of ASSA ABLOY Entrance Systems US Inc. is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.

• Preparation and manufacturing conditions in the factory of Monroe do not require special health and safety measures. Standard health and safety measures (work gloves, hearing protection, safety shoes, dust mask when sanding and milling, dust extraction, etc.) are observed where appropriate.

• Water and soil contamination does not occur and all production related waste is processed internally in the appropriate manner.

#### 2.8 Product processing/Installation

The ASSA ABLOY SL500 EcoDoor narrow stile are supplied ready for installation. The frame as well as the door leaves are assembled in factory and installed onsite by using simple tools including drills and hand tools. The installation is performed by certified installation technicians.

#### 2.9 Packaging

Packaging exists for the purpose of protection during transportation. ASSA ABLOY Entrance Systems sliding door systems are initially packaged in corrugated cardboard. The packaging does not return to the manufacturer meaning it stays at the site. All packaging is recyclable.

Material	Value (%)
Cardboard/ Paper	100
Total	100.0

#### 2.10 Condition of use

Regular inspections shall be made according to national regulations and product documentation by an ASSA ABLOY Entrance Systems trained and qualified technician. The number of service occasions should be in accordance with national requirements and product documentation. Service is recommended according to "Service Log Book.

Regular inspections and cleaning should be performed by the owner of the product, according to "Owner's Manual"

The best way to remove dust and dirt from the ASSA ABLOY SL500 EcoDoor narrow stile is to use water and a soft cloth or a sponge. A gentle detergent may be used. To maintain the quality of the enamel layer, the surfaces should be cleaned once/four months period. The cleaning should be documented. To avoid damages to the profiles, the brushes/weather stripping must be vacuum-cleaned weekly.

• Do not expose windows, doors or profiles to alkalis. Both aluminum and glass are sensitive to alkalis.

• Do not clean with high pressure water. Operator, program selector and sensor may be damaged and water may enter the profiles.

• Do not use polishing detergent.

• Do not scrub with materials like Scotch-brite, as this will cause mechanical damage.

#### 2.11 Environment and health during use

There is no harmful emissive potential. Minimal risk for personal injury if correctly configured and maintenance recommendations applied.

#### 2.12 Reference service life

The product has a reference service life of more than 1,000,000 cycles and 10 years of standard daily use (with the recommended maintenance and service program) For this EPD lifetime of 10 years was considered.

## 2.13 Extraordinary effects Fire

No standardized test has been conducted. The product wall surfaces however consist of a large amount of aluminum and glass which does not add to the spread of fire."

#### Water

Contains no substances that have any impact on water in case of flood. Electric operation of the device will be influenced negative.

#### **Mechanical destruction**

No danger to the environment can be anticipated during mechanical destruction.

#### 2.14 Reuse stage

The product is possible to re-use during the reference service life and be moved from one entrance to another. The majority, by weight, of components is aluminum alloy, steel and glass which can be recycled. The plastic components can be used for energy recovery within a waste incineration process.

#### 2.15 Disposal

The product contains mostly steel, glass, aluminum which are all possible to recycle. Where no waste recycling technologies are available, the product can be placed in a landfill site.

#### 2.16 Further information

ASSA ABLOY Entrance Systems US Inc 1900 Airport Road Monroe, NC 28110 United States www.assaabloyentrance.com

### 3. LCA: Calculation rules

#### 3.1 Declared Unit

The declaration refers to the functional unit of 1 automatic sliding door system ASSA ABLOY SL500 EcoDoor narrow stile as specified in Part B requirements on the EPD for PCR Automatic doors, automatic gates, and revolving door systems (door systems).

#### Declared unit

Name	Value	Unit
Mass (without packaging)	387.09	kg
Mass packaging (paper)	8.25	kg
Conversion factor to 1 kg	0.002583	-
Declared unit for revolving door systems (dimensions acc. to this PCR)	1	piece

#### 3.2 System boundary

Type of the EPD: cradle to gate - with Options The following life cycle stages were considered:

Production stage:

- A1 Raw material extraction and processing
- A2 Transport to the manufacturer and
- A3 Manufacturing

Construction stage:

- A4 Transport from the gate to the site
- A5 Packaging waste processing

Use stage related to the operation of the building includes:

• B6 – Operational energy use

C1-C4 End-of-life stage:

- C2 Transport to waste processing,
- C3 Waste processing for recycling and
- C4 Disposal (landfill, waste for incineration).

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.

Module D:

• Declaration of all benefits and loads

#### 3.3 Estimates and assumptions

<u>Transportation:</u> Data on mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2% of total product mass. In case of unknown transport distances for parts and materials, contributing less than 2% to the total product mass, transport by road over an average distance of 500 km was assumed.

#### Use stage:

For the use stage, it is assumed that the sliding door is used in US, thus a US electricity grid mix is considered within this stage. According to the most representative scenario, the operating hours of the product are accounted for 2130 hours in on mode, 2130 hours in standby mode and 4260 hours in idle mode per year; the power consumption throughout the whole life-cycle is 4068 kWh.

#### EoL:

In the End-of-Life stage, for all the materials which can be recycled, a recycling scenario with 100% collection rate was assumed. The country where EoL takes place is the US. Furthermore, a transport distance by truck of 100 km has been assumed in the model.

#### 3.4 Cut-off criteria

In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available). In case a specific flow contributing less than 1% in mass or energy is not available, worst case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

#### 3.5 Background data

For life cycle modeling of the considered products, the GaBi 6 Software System for Life Cycle Engineering, developed by thinkstep AG, is used /GaBi 6 2013/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi 6 2013D/. To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

#### 3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR Part A/.

thinkstep performed a variety of tests and checks during the entire project to ensure high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.

The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.

All relevant background datasets are taken from the GaBi 6 software database.

#### 3.7 Period under review

The period under review is 2015/16 (12-month average).

#### 3.8 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the combusted material. In this EPD, the following specific life cycle inventories for the WIP are considered for:

- Waste incineration of plastic
- Waste incineration of paper



Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the GaBi dataset documentation.

#### 3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared

were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account. GaBi 6 serves as background database for the calculation.

### 4. LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

#### Transport to the building site (A4)

Name	Value	Unit
Truck transport		
Litres of fuel diesel with maximum load (27t payload)	39.4	l/100km
Transport distance truck	1042	km
Capacity utilization (incl. empty runs) of truck	85	%

#### Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper packaging)	8.25	kg
Output substances following waste treatment on site (Plastics packaging)	0.000	kg

#### **Reference service life**

Name	Value	Unit
Reference service life	10	а

#### **Operational energy use (B6)**

Name	Value	Unit
Electricity consumption per RSL	4068.3	kWh
(Tuyears, 305 days per year)	-	
Hours per day in on mode	6	h
Hours per day in stand-by mode	6	h
Hours per day in idle mode	12	h
Power consumption – on mode	71	W
Power consumption – stand-by mode	40	W
Power consumption – idle mode	40	W

\*Total energy consumed during the whole product life was calculated using following formula:

(W\_active\_mode\*h\_active\_mode+W\_idle\_mode\*h\_idl e\_mode+W\_stand\_by\_mode\*h\_stand\_by\_mode)\*Life\_ span\*days\_year\*0.001

#### Where:

- W\_active\_mode Energy consumption in active mode in W
- h\_active\_mode Operation time in active mode in hours
- W\_idle\_mode Energy consumption in idle mode in W
- h\_idle\_mode Operation time in idle mode in hours
- W\_stand\_by\_mode Energy consumption in stand-by mode in W
- h\_stand\_by\_mode Operation time in stand-by mode in hours
- Life\_span Reference service life of product
- days\_year Operation days per year
- 0.001 Conversion factor from Wh to kWh.

#### End of life (C1-C4)

Name	Value	Unit
Collected separately Aluminium, steel, electro mechanics, brass and plastic parts	270.095	kg

Incineration of plastic parts	2.92	kg
Recycling Aluminium, brass, steel, electronic, electro-mechanics	267.18	kg

## Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Collected separately waste type (including packaging)	281.70	kg
Recycling Aluminium	19.48	%
Recycling Brass	0.0003	%
Recycling Steel	75.37	%
Recyling Electro mechanics	1.19	%
Incineration of Plastic parts	1.037	%
Incineration of packaging (paper) (from A5)	2.93	%

7

## 5. LCA: Results

Results shown below were calculated using CML 2000 – Apr. 2013 Methodology.

DESC	RIP	TION O	F THE S	YSTE	M BOU	JND	ARY ()	( = IN	NCLU	DED IN	LCA	; MN	D =	MOD	ULE N	OT DI	ECLA	RED)
			N							BENEFITS AN								
PROD	υст	STAGE	PROC	ESS			ι	JSE S	TAGE			END OF LIFE STAGE					OND THE	
			STA	GE														YSTEM JNDARYS
			Je						Ê	gy	Ē	_			b			
rial	rt ring		m tl site	>		Ce		ent <sup>1)</sup>	ent,	suer	wat	tion .		ť	ssir	=		γ₽=
ply	ods	ctu	the the	lqm	e.	nar	oair	eme	u qu	ale	, lar	struc	olitio	ods	oce	osa	-se-	ver, clinç ntia
w m	ran:	nufa	port e to	sse	٦	inte	Rep	lace	rbis	tion tion	atio		me	ran:	e pr	Jisp	Rel	ecy oote
Ra	F	Mar	ans gate	A		Ma		Rep	Refu	era	pera	)e-c		F	aste		1	<u>к қ д</u>
							_	Ľ.	- d	Ō	ð 🗅			>				
A1	A2	A3	A4	A5	A5 B1 B2 B3		B4	B	5 B6	B7	B7 C1		C2	C3	C4		D	
Х	Х	Х	Х	Х	MND	MND	MND	MND	) MN	ID X	MN	DM	ND	Х	< X			Х
RESU	LTS	S OF TH	E LCA -	ENVI	RONM	ENTA	AL IMP	ACT	One	piece o	of au	toma	tic :	slidin	g door	syste	em	
Parame	ter	Pa	rameter	- 4' - 1	Unit		A1 - A3		A4	A5	0.70	B6	4.05	C2	C3	(	24	D
GWP		Global wa	arming poter	ntial	[kg CO <sub>2</sub> -	Eq.] <sup>1</sup>	,45E+0	3 1,9	7E+01	1,17E+01	2,73	3E+03	1,85	5E+00	6,81E-01	1,00	E+01	-8,75E+02
ODP		Depletion	eric ozone la	the ayer	[kg CFC Eq.]	11- 1	1,95E-06	5 9,4	5E-11	5,34E-11	9,46	6E-07	8,88	3E-12	4,66E-10	) 4,54	E-11	2,50E-07
AP	/	Acidificatio ai	n potential o nd water	fland	[kg SO <sub>2</sub> -	Eq.] 7	7,13E+0	9,0	3E-02	2,66E-03	9,23	3E+00	8,49	9E-03	3,21E-03	3 1,23	E-02	-4,39E+00
EP		Eutrophi	cation poten	tial	[kg (PO	)3 !	5,27E-01	2,0	6E-02	4,65E-04	4,93	3E-01	1,94	4E-03	1,81E-04	1,58	E-03	-2,53E-01
DOOL		Format	Formation potential of			en (	6,17E-01	-2,9	91E-02	1,89E-04	5,65	5E-01	-2,7	4E-03	1,91E-04	1,06	E-03	-3,65E-01
POCP		tropos photoch	nemical oxidants															
ADPE	ADPE Abiotic de		letion potent ssil resource	tion potential for [kg		iq.] <sup>2</sup>	2,05E-02	2 7,4	4E-07	2,11E-07	3,6	1E-04	6,99	9E-08	9,42E-08	3 1,30	E-06	-1,26E-02
ADPF	DPF Abiotic		pletion potential for		[MJ]	1	,60E+0	4 2,72	2E+02	3,27E+00	3,15	3,15E+04		6E+01	7,73E+0	2,45	E+01	-8,30E+03
RESU	LTS	OF TH	E LCA -	RES	OURCE	US	E: One	pied	ce of a	automati	c slic	dina c	loor	syste	m			
	Parameter Parameter											0,010						
Parame	ter		Paramete	ər		Unit	A1	- A3	A4	A5		B6		C2	C3		C4	D
Parame PERE	ter	Renewa	Paramete able primary energy car	er / energ rier	y as	Unit [MJ]	<b>A1</b> 3,10	<b>- A3</b> E+03	A4 -	A5 -		B6 -		C2	C3		C4	D -
Parame PERE PERM	ter E	Renewa	Paramete able primary energy carry vable prima	er / energ rier ry ener	y as	Unit [MJ] [MJ]	A1 3,10 0,00	- <b>A3</b> E+03 E+00	A4 - -	A5 -		B6 - -		C2 -	C3 -		C4 - -	D - -
Parame PERE PERM PERT	ter : 1	Renewa Renew resource Total us	Paramete able primary energy carry vable prima es as materi e of renewa	er / energ rier ry ener al utiliz able prin	rgy ation mary	Unit [MJ] [MJ]	A1 3,10 0,00 3,10	- <b>A3</b> E+03 E+00 E+03	<b>A4</b> - - 1,07E+	- - - 01 3,05E	-01 3	<b>B6</b> - - 3,08E+(	03 1,	<b>C2</b> - 01E+0	C3 - - 0 2,21E+	00 2,0	<b>C4</b> - - 9E+00	D - -2,17E+03
Parame PERE PERM PERT	ter 1 - E	Renewa Renewa resource Total us e Non-rene	Paramete able primary energy carry vable prima es as materi e of renewa nergy resou wable prima	er rier ry ener al utiliz able priu urces ary ene	y as rgy ration mary rgy as	Unit [MJ] [MJ] [MJ]	A1 3,10 0,00 3,10 1,83	- <b>A3</b> E+03 E+00 E+03 E+04	A4 - - 1,07E+ -	- - - - - - - - -	-01 3	<b>B6</b> - - 3,08E+(	03 1,	- - 01E+00	C3 - - 0 2,21E+ -	00 2,0	<b>C4</b> - 9E+00 -	D - -2,17E+03 -
Parame PERE PERM PERT PENR	ter - E M	Renewa Renew resource Total us e Non-rene	Parameter able primary energy car vable prima s as materi e of renewa mergy resou wable prima energy car wable prima	er / energ rier ry ener al utiliz able prin irces ary ene rier ary ene	y as rgy ation mary rgy as rgy as	Unit [MJ] [MJ] [MJ] [MJ]	A1 3,10 0,00 3,10 1,83 0,00	- <b>A3</b> E+03 E+00 E+03 E+04 E+04	A4 - 1,07E+ - -		-01 3	<b>B6</b> - 3,08E+( -	03 1,	- - 01E+00 -	C3 - - 0 2,21E+ - -	00 2,0	<b>C4</b> - 9E+00 -	D - -2,17E+03 -
Parame PERE PERN PERT PENR PENR	ter - M M T	Renewa Renew resource Total us e Non-rene Mon-rene m Total use o	Parameter able primary vable primary s as materi e of renewa nergy resou wable prima energy carn wable prima aterial utiliz of non-rene	er / energ rier ry ener al utiliz ble prin rices ary ene rier ary ene ation wable p	y as rgy aation mary rgy as rgy as rgy as porimary	Unit [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83	- <b>A3</b> E+03 E+00 E+03 E+04 E+04 E+00	A4 - - 1,07E+ - 2,73E+		-01 3	B6 - - - - - - - - - - - - - - -	03 1,	C2 - - 01E+0 - - 57E+0	C3 - - 0 2,21E+ - - 1 1,21E+	00 2,0	C4 - 9E+00 - - 9E+01	D - -2,17E+03 - - -9,49E+03
Parame PERE PERN PERT PENR PENR	ter	Renewa Renewa resource Total us e Non-rene Mon-rene m Total use o Use o	Parameter able primary energy carry vable prima is as materia e of renewas mergy resou wable prima aterial utiliz of non-rene nergy resou f secondary	er / energ rier ry ener al utiliz uble prin urces ary ener rier ary ener ary ener ary ener ary ener ary ener ary ener (al utiliz urces (b) (b) (b) (b) (b) (b) (b) (b) (b) (b)	y as rgy ation mary rgy as rgy as orimary ial	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12	- A3 E+03 E+00 E+03 E+04 E+00 E+04 E+01	A4 - - 1,07E+ - 2,73E+ 0,00E+	A5           -	-01 3	<b>B6</b> - - - - - - - - - - - - - - - - - - -	03 1, 03 2, 04 2, 00 0,	C2 - 01E+00 - 57E+0 00E+0	C3 - - 0 2,21E+ - - 1 1,21E+ 0 0,00E+	00 2,0	<b>C4</b>	D - -2,17E+03 - -9,49E+03 0,00E+00
Parame PERE PERN PERT PENR PENR SM	ter 1 1 E M T	Renewa resource Total us e Non-rene Mon-rene m Total use o e Use o Use o frer	Parameter able primary energy carry vable prima is as materia e of renewa nergy resou wable prima aterial utiliz of non-rener nergy resou f secondary newable see	er / energ rier ry ener al utiliz uble prin urces ary ene rier ary ener ation urces / mater condary	y as gy ation mary rgy as rgy as rgy as brimary ial y fuels	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [kg]	A1           3,10           0,000           3,10           1,83           0,000           1,83           5,12           0,000	- <b>A3</b> E+03 E+00 E+03 E+04 E+04 E+00 E+04 E+01 E+01 E+00	A4 - - 1,07E+ - 2,73E+ 0,00E+ 0,00E+	A5           -	-01 3 +00 3 +00 0 +00 0	B6 - - - - - - - - - - - - - - - - - - -	03 1, 03 2, 04 2, 00 0, 00 0,	C2 - 01E+00 - 57E+0 00E+0 00E+0	C3 - 0 2,21E+ - 1 1,21E+ 0 0,00E+ 0 0,00E+	00 2,0 00 2,0 01 2,5 00 0,0 00 0,0	C4 - 9E+00 - - 9E+01 0E+00 0E+00	D - -2,17E+03 - - -9,49E+03 0,00E+00 0,00E+00
Parame PERE PERN PENR PENR PENR SM RSF	ter           -	Renewa Renewa Total us Non-rener Mon-rener m Total use o e Use of rer Use of no	Parameter able primary energy carrivable prima is as materi e of renewas mergy resou wable prima aterial utiliz of non-rene f secondary newable secondary	er / energ rier ry ener al utiliz ble prin irces ary ene ation wable p irces / mater / mater condar	y as rgy ation mary rgy as rgy as primary ial y fuels ndary	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,000           3,10           1,83           0,000           1,83           5,12           0,000           0,000	- <b>A3</b> E+03 E+00 E+04 E+04 E+00 E+04 E+01 E+01 E+00 E+00	A4 - - 1,07E+ - - 2,73E+ 0,00E+ 0,00E+	A5 - - - - - - - - - - - - - - - - - - -	-01 3 +00 3 +00 0 +00 0	B6 - - - - - - - - - - - - - - - - - - -	03 1, 03 1, 04 2, 00 0, 00 0, 00 0,	C2 - 01E+0 - 57E+0 00E+0 00E+0 00E+0	C3 - 0 2,21E+ - 1 1,21E+ 0 0,00E+ 0 0,00E+ 0 0,00E+	00 2,0 01 2,5 00 0,0 00 0,0 00 0,0	C4 - 	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00
Parame PERE PERN PERR PENR PENR SM RSF NRSF	ter           I	Renewa resource Total us e Non-rene m Total use o e Use o Use of rer Use of no	Parameter able primary energy carry vable prima is as materia e of renewa nergy resou wable prima aterial utiliz of non-rene mergy resou f secondary newable sea on-renewable fuels e of net fresl	er / energ rier ry energ al utiliz uble prin urces ary energier ary energier ary energier wable prin urces / mater condargier h water	y as (gy (ation mary rgy as rgy as rgy as orimary ial y fuels ndary	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           0,00           9,74	- A3 E+03 E+00 E+03 E+04 E+04 E+00 E+04 E+00 E+00 E+00 E+00	A4 - - - - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E-	A5           -	-01 3 +00 3 +00 0 +00 0 +00 0	B6 - - - - - - - - - - - - - - - - - - -	000 0, 000 0, 000 0, 000 0, 000 0, 01 7	C2 - 01E+00 - 57E+0 00E+0 00E+0 00E+0 11E-04	C3 - 0 2,21E+ - 1 1,21E+ 0 0,00E+ 0 0,00E+ 0 0,00E+ 4 5,47E-	00 2,0 01 2,5 00 0,0 00 0,0 00 0,0 00 0,0 03 -6,0	C4 - 9E+00 - 9E+01 0E+00 0E+00 0E+00 0E+00	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 -6,17E+00
Parame PERE PERN PENR PENR PENR SM RSF NRSF FW	ter           I	Renewa Renewa Total us e Non-rene m Total use o e Use of rer Use of no Use of no Use of no	Parameter able primary energy carrivable prima is as materi e of renewas energy resou wable prima aterial utiliz of non-rene inergy resou f secondary newable secondary newable secondary fuels of net fresl	er y energ rier ry ener al utiliz ble prin irces ary ene ation wable prin irces y mater condan le seco h water	y as rgy ation mary rgy as rgy as primary ial y fuels ndary - PUT F	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           0,00           9,74           S ANI	- A3 E+03 E+00 E+03 E+04 E+04 E+04 E+01 E+00 E+00 E+00 E+00	A4 - - - 2,73E+ 0,00E+ 0,00E+ 7,57E- STE	A5 - - - - - - - - - - - - -	-01 3 +00 3 +00 0 +00 0 +00 0	B6 - - - - - - - - - - - - - - - - - - -	03 1, 03 1, 04 2, 00 0, 00 0, 00 0, 01 7	C2 - - - - 57E+0 - - 57E+0 00E+0 00E+0 00E+0 11E-04	C3 - 0 2,21E+ - 1 1,21E+ 0 0,00E+ 0 0,00E+ 0 0,00E+ 4 5,47E-	00 2,0 01 2,5 00 0,0 00 0,0 000 0,0 000 0,0 00000000	C4 - - - - - - - - - - - - - - - - - - -	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E
Parame PERE PERN PERT PENR PENR PENR SM RSF NRSF FW <b>RESU</b> system	ter           :	Renewa Renewa Total us e Non-renee Mon-renee m Total use o e Use of rer Use of no Use of no Use of no	Parameter able primary energy carry vable prima is as materia e of renewa mergy resoury wable prima aterial utiliz of non-renery mergy resourt f secondary newable sea on-renewable fuels e of net fresh	er / energ rier ry ener al utiliz uble prin urces ary ene ation wable prin urces / mater / mater condary le seco h water OUT	y as (gy (ation) mary (gy as (	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           0,00           9,74           S ANE	- A3 E+03 E+00 E+04 E+04 E+04 E+04 E+01 E+00 E+00 E+00 E+00 O WA	A4 - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- <b>\STE</b>	A5           -	-01 3 -01 3 +00 3 +00 0 +00 0 +00 0 -02 1	B6 - - - - - - - - - - - - - - - - - - -	000 0, 000 0,000 0,000 0,00000000	C2 - - - - 57E+0 00E+0 00E+0 00E+0 00E+0 11E-04	C3 - - 0 2,21E+ - - 1 1,21E+ 0 0,00E+ 0 0,00E+ 0 0,00E+ 4 5,47E- of auto	00 2,0 01 2,5 00 0,0 00 0,0 00 0,0 03 -6,0 matic	C4 - - - - - - - - - - - - - - - - - - -	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door
Parame PERE PERN PENR PENR PENR SM RSF NRSF FW RESU System Parame	ter 1 1 E M T T T T LTS n	Renewa Renewa Total us e Non-rener m Total use o e Use o Use of nor Use of nor	Parameter able primary energy carry vable prima is as materia e of renewas energy carry wable prima aterial utiliz of non-rene nergy resou f secondary newable sere on-renewable fuels of net fresh E LCA –	er y energ rier ry ener al utiliz ble priu irces ary ene ary ene ary ene ary ene ary ene ary ene ary ener tier ary ener ary ener tier ary ener tier	y as  rgy ation mary rgy as rgy as orimary ial y fuels ndary . PUT FI Unit	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           9,74           S ANE           A1 - A3	A3           E+03           E+04           E+04           E+04           E+04           E+01           E+00           E+04           E+04 </td <td>A4 - - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- <b>\STE</b></td> <td>A5 - - - - - - - - - - - - -</td> <td>-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 ORIE</td> <td>B6 - - - - - - - - - - - - - - - - - - -</td> <td>04 2, 00 0, 00 0, 00 0, 00 0, 01 7 00 0</td> <td>C2 - - - - 57E+0 - - 57E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0</td> <td>C3 - - - - - - - - - - - - -</td> <td>00 2,0 01 2,5 00 0,0 00 0,0 00000000</td> <td>C4 - - - - - - - - - - - - - - - - - - -</td> <td>D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door D</td>	A4 - - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- <b>\STE</b>	A5 - - - - - - - - - - - - -	-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 ORIE	B6 - - - - - - - - - - - - - - - - - - -	04 2, 00 0, 00 0, 00 0, 00 0, 01 7 00 0	C2 - - - - 57E+0 - - 57E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0	C3 - - - - - - - - - - - - -	00 2,0 01 2,5 00 0,0 00 0,0 00000000	C4 - - - - - - - - - - - - - - - - - - -	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door D
Parame PERE PERN PENR PENR PENR SM RSF NRSF FW <b>RESU</b> system Parame	tter 1 1 1 E M T T T T T T T T T T T T T	Renewa resource Total us e Non-rene m Total use of Use of rer Use of no Use of rer Use of no Use of <b>TH</b> B F Hazardou	Parameter able primary energy carry vable prima es as materi e of renewas energy resou wable prima aterial utiliz f secondary newable secondary newable secondary newable secondary the secondary newable secondary the secondaryt	er y energ ry energ al utiliz al utiliz	y as rgy ation mary rgy as rgy as orimary ial y fuels ndary rUT FI	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,000           9,74           S ANE           A1 - A3           04E-01	- A3           E+03           E+04           E+00	A4 - - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 7,57E- <b>\STE</b> <b>\STE</b>	A5           -           01           3,05E           -           02           00	-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 ORIE S,11	B6 - - - - - - - - - - - - - - - - - - -	03 1, 03 1, 04 2, 000 0, 000 0, 01 7 000 1 5,85	C2 - - 01E+00 - - 57E+0 00E+00 00E+00 00E+00 00E+00 00E+00 00E+00 00E+00 00E+00 00E+00	C3 - - - - - - - - - - - - -	00 2,0 01 2,5 00 0,0 00 2,0 0 0 0 2,0 0 0 0 2,0 0 0 0 0,0 0 0 0 0,0 0 0 0 0,0 0 0 0 0,0 0 0 0 0,0 0 0 0,0 0 0,0 0 0 0,0 0 0 0 0,0 0 0 0,0 0 0 0	C4 - - - - - - - - - - - - -	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door 1,64E-01
Parame PERE PERN PENR PENR PENR SM RSF NRSF FW <b>RESU</b> system Parame HWE	tter	Renewa Renewa Total us e Non-rene m Total use o e Use of rer Use of no Use of no	Parameter able primary energy car vable prima is as materia e of renewas energy car wable prima aterial utiliz of non-rene mergy resou f secondary newable see on-renewable fuels of net fresh is used to a carameter is waste dis azardous wa	er / energ rier ry energ al utiliz ble prin irces ary energener ary energenergenergenergenergenergenergener	y as  (gy (ation mary rgy as ) (gy (rgy as ) (	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           9,74           S ANE           04-A3           04E-01           92E+01	A3           E+03           E+04           E+04           E+04           E+01           E+00           E+01           E+00           E+00           E+01           E+00           E+00           E+01           E+00           E+00           E+00           E+00           S400           A300           A400           A400 </td <td>A4 - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- <b>STE</b> A4 2E-04 3E-02</td> <td>A5           -           01           3,05E           -           01           3,05E           -           02           3,84E           00</td> <td>-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 ORIE 3,11 1,27</td> <td>B6 - - - - - - - - - - - - -</td> <td>000 0, 000 0, 0000 0,00000000</td> <td>C2 - 01E+00 - 57E+0 00E+0</td> <td>C3 - - - - - - - - - - - - -</td> <td>00 2,0 01 2,5 00 0,0 00 0,0 00 0,0 00 0,0 03 -6,0 matic 0 3 1,33 3 1,18</td> <td>C4 - - - - - - - - - - - - - - - - - - -</td> <td>D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door g door 1,64E-01 -9,11E+01</td>	A4 - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- <b>STE</b> A4 2E-04 3E-02	A5           -           01           3,05E           -           01           3,05E           -           02           3,84E           00	-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 ORIE 3,11 1,27	B6 - - - - - - - - - - - - -	000 0, 000 0, 0000 0,00000000	C2 - 01E+00 - 57E+0 00E+0	C3 - - - - - - - - - - - - -	00 2,0 01 2,5 00 0,0 00 0,0 00 0,0 00 0,0 03 -6,0 matic 0 3 1,33 3 1,18	C4 - - - - - - - - - - - - - - - - - - -	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door g door 1,64E-01 -9,11E+01
Parame PERE PERN PENR PENR PENR SM RSF NRSF FW RESU System Parame HWC NHWI RWC	tter           I	Renewa Renewa Total us e Non-renee Mon-renee m Total use of Use of rer Use of no Use of no Use <b>S OF TH</b> Hazardou Non-ha Radioactin	Parameter able primary energy carrivable primary sa s materi e of renewas wable prima energy resou wable prima aterial utiliz of non-reney f secondary newable secondary newable secondary the wable secondary the secondarythe secondary the secondarythe secondarythe seco	er y energ ry energ al utiliz ble prin irces ary ene ation wable prin irces y mater condary le seco h water OUT sposed aste sposed	y as rgy ation mary rgy as rgy as rgy as orimary ial y fuels indary r PUT FI Unit [kg] [kg] [kg] [kg]	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,000           9,74           S ANE           04E-01           92E+01           25E-01	A3         A3           E+03         E+04           E+04         E+04           E+04         E+04           E+04         E+04           E+00         E+04           E+01         E+00           E+02         E+00           E+03         E+04           E+04         E+01           E+00         E+00           E+00         E+00           E+00         E+00           S=0         WA           A3,58         3,58	A4 - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- <b>XSTE</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b> <b>X</b>	A5           -           01         3,05E           -         -           01         3,05E           02         3,84E           00         0,00E           00         0,00E           00         0,00E           00         0,00E           03         3,40E           CATEG         2,64E-04           2,94E-01         2,24E-04	-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 0 CRIE 3,11 1,27 3,28	B6 - - - - - - - - - - - - - - - - - - -	03 1, 03 1, 04 2, 00 0, 00 0, 00 0, 01 7 00 0, 01 7 00 0, 01 7 00 0, 03 0, 04 2, 04 2, 04 2, 04 2, 04 2, 05 0, 04 2, 05 0, 06 0, 07 0, 00 0, 0, 00 0, 00 0,00000000	C2 - - - - 57E+0 - - 57E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 00E+0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	C3 - 0 2,21E+ - 1 1,21E+ 0 0,00E+ 0 0,00E+ 0 0,00E+ 1 5,47E- 0 auto C3 1,68E-03 3,91E-03 1,75E-03	00 2,0 01 2,5 00 0,0 00 1,5 0 00 2,0 0 0 0,0 0 0 0,0 0 0,0 0 0 0,0 0 0 0,0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	C4 - - - - - - - - - - - - -	D - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door 1,64E-01 -9,11E+01 -4,72E-01
Parame PERE PERN PENR PENR PENR SM RSF NRSF FW <b>RESU</b> system Parame HWE NHWI RWE	tter T T T T T T T T T T T T T	Renewa Renewa Total us Non-rener Mon-rener Mon-rener Use of Use of rer Use of no Use of no Use of no Use of no Use of no Radioactin Radioactin Compo	Parameter able primary energy car vable prima is as materia e of renewal wable prima aterial utiliz of non-rene mergy resou f secondary newable ser in-renewable fuels of net frest is waste dis azardous wi disposed we waste dis nents for re	er / energ rier ry energ al utiliz ble prin rier ary ene ation wable p rices / mater condar; le seco h water OUT sposed aste sposed -use	y as  (gy ation mary rgy as  rgy as  rgy as  rgy as  rgy as  rundary  PUT FI  (kg)  (kg)  (kg)	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           9,74           S ANE           A1 - A3           04E-01           92E+01           25E-01           00E+00	A3           E+03           E+04           E+04           E+01           E+00           E+01           E+00           E+00           E+01           E+00           E+00           E+00           E+01           E+00           E+00           E+00           A3           A4           A4	A4 - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- XSTE A4 2E-04 3E-02 3E-04 4E+00	A5           -           01         3,05E           01         3,05E           02         3,84E           00         0,00E           00         0,00E           00         0,00E           00         3,340E           CATEG         A5           2,64E-04         2,94E-011           2,24E-04         0,00E+000	-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 -02 1 -02 1 3,11 1,27 3,28 0,00	B6 - - - - - - - - - - - - -	0,000	C2 - 01E+00 - 57E+0 00E+0	C3 - - - - - - - - - - - - -	00 2,0 01 2,5 00 0,0 00 0,0 00 0,0 00 0,0 00 0,0 03 -6,0 matic 0 1,33 3 1,18 3 5,55 0 0,00	C4 - - - - - - - - - - - - -	D - -2,17E+03 - -2,17E+03 - - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 0,00E+00 1,64E-01 -9,11E+01 -4,72E-01 0,00E+00
Parame PERE PERN PENR PENR PENR SM RSF SM RSF FW <b>RESU</b> system Parame HWC NHWI RWC CRU	ter           I	Renewa Renewa Total us e Non-rener m Total use o e Use of nor Use of nor Nor-ha Materia	Parameter able primary energy carrivable primary energy carrivable prima es as materia e of renewas energy carrivable prima aterial utiliz of non-rene may resource f secondary newable secondary newable secondary f secondar	er y energ rier ry energ al utiliz ble priu- irces ary ene ation wable priu- rier ary ene ation wable priu- rices y mater condary le seco h water OUT sposed aste sposed -use	y as rgy ation mary rgy as rgy as rgy as rgy as rgy as rgy as <b>PUT FI</b> <b>PUT FI</b> <b>PUT FI</b> (kg) [kg] [kg] [kg] [kg]	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           9,74           S ANE           A1 - A3           04E-01           92E+01           25E-01           00E+00	A3           E+03           E+04           E+04           E+04           E+04           E+01           E+00           E+04           S=00           E+04           E+01           E+00           E+01           E+00           E+00           S=00           WA           6,222           3,433           3,588           0,000           0,000	A4 - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- A5 44 2E-04 3E-04 3E-04 4E+00 1E+00	A5           -           01         3,05E           01         3,05E           02         3,84E           00         0,00E           00         0,00E           00         0,00E           00         0,00E           00         3,40E           CATEG         A5           2,64E-04         2,94E-01           2,24E-04         0,00E+00           8,25E+00         3,25E+00	-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 ORIE 3,11 1,27 3,28 0,00 0,00	B6 - - - - - - - - - - - - - - - - - - -	04 2, 00 0, 00 0, 00 0, 01 7 00 1 5,85 3,23 3,36 0,000 0,000	C2 - - - - - - - - - - - - -	C3 - - - - - - - - - - - - -	00 2,00 01 2,50 00 0,0 00 0,0 00 0,0 00 0,0 00 0,0 00 0,0 00 0,0 00 0,0 00 1,0 0 0 0,0 0 0 1,0 0 0 0,0 0 0 2 0,0 0 0 0,0 0 0 2,0 0 0 0 0,0 0 0 0,0 0 0 0,0 0 0 0,0 0 0 0,0 0 0 0 0	C4 - - - - - - - - - - - - -	D - -2,17E+03 - -2,17E+03 - - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 g door D 1,64E-01 -9,11E+01 -4,72E-01 0,00E+00 0,00E+00 0,00E+00
Parame PERE PERN PENR PENR PENR SM RSF SM RSF FW <b>RESU</b> System Parame HWD NHWI RWD CRU MFR MER	tter           Image: Constraint of the sector of t	Renewa Renewa Total us e Non-rener m Total use of Use of rer Use of rer Use of nor Use of nor Use of nor Use of nor Radioactin Radioactin Materials f	Parameter able primary energy carry vable prima is as materi e of renewas energy resou wable prima aterial utiliz of non-rene inergy resou f secondary newable secondary newable secondary in exable secondary	er ry energ ry energ al utiliz al utiliz	y as rgy ation mary rgy as rgy as orimary ial y fuels indary <b>PUT FI</b> <b>PUT FI</b> <b>QUNIT</b> [kg] [kg] [kg] [kg] [kg] [kg] [kg]	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           9,74           S ANE           A1 - A3           04E-01           92E+01           25E-01           00E+00           00E+00	- A3 E+03 E+00 E+04 E+04 E+04 E+04 E+01 E+00 E+00 E+00 E+00 E+00 E+00 C E+00 C E+00 C C C C C C C C C C C C C C C C C C	A4 - - - - - - - - - - - - -	A5           01         3,05E           01         3,05E           02         3,84E           00         0,00E           00         0,00E           00         0,00E           01         3,40E           CATEG         A5           2,64E-04         2,24E-04           0,00E+00         8,25E+00	-01 3 +00 3 +00 0 +00 0 +00 0 +00 0 -02 1 0 -02 1 3,11 1,27 3,28 0,00 0,00 0,00	B6 - - - - - - - - - - - - -	03 1, 04 2, 00 0, 00 0, 00 0, 00 0, 01 7 00 0, 0,00 0,00 0,00 0,00	C2 - - - - - - - - - - - - -	C3 - - - - - - - - - - - - -	00 2,0 01 2,5 00 0,0 00 0,0 0 0	C4 - - - - - - - - - - - - -	D - -2,17E+03 -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 0,00E+00 0,00E+00 1,64E-01 -9,11E+01 -4,72E-01 0,00E+00 0,00E+00 0,00E+00
Parame PERE PERN PENR PENR PENR SM RSF NRSF FW RESU System Parame HWC NHWI RWC CRU MFR MER EEE	ter	Renewa Renewa Total us e Non-renee m Total use o e Use o Use o Use o Cuse o Use of no Use of no Use of no Use of no Cuse SOF TH Hazardou Non-ha Radioactir Compo Materials f Exported	Parameter able primary energy carry vable primary e of renewas energy resou wable prima aterial utiliz of non-rene nergy resou f secondary newable sec on-renewable fuels of net fresi E LCA – Parameter us waste dis azardous wa disposed ve waste dis acardous wa disposed ve waste disposed ve wast	ecovery energy a venerg river ry energy al utiliz ble priurces ary ene ation wable priver ary ene ation wable priver ary ene ation wable priver ary ene aton wable priver ary ene aton wable priver ary ene aton wable priver ary ene aton wable priver ary ene aton wable priver ary energy	y as  (gy ation mary rgy as (gg) (hg) (kg) (kg) (kg) (kg) (kg) (kg) (kg) (k	Unit [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1           3,10           0,00           3,10           1,83           0,00           1,83           5,12           0,00           9,74           S ANE           04E-01           92E+01           25E-01           00E+00           00E+00           00E+00	A3           E+03           E+04           E+04           E+04           E+01           E+00           E+04           E+01           E+00           E+01           E+00           E+01           E+00           D           WA           6,222           3,433           3,588           0,000           0,000           0,000	A4 - 1,07E+ - 2,73E+ 0,00E+ 0,00E+ 0,00E+ 7,57E- A4 2E-04 3E-02 3E-04 E+00 E+00 E+00 E+00 E+00	A5           01         3,05E           01         3,05E           02         3,84E           00         0,00E           00         0,00E           00         0,00E           00         0,00E           03         3,40E           CATEG         2,94E-01           2,94E-01         2,24E-04           0,00E+00         8,25E+00           0,00E+00         1,48E+01	-01 3 +00 3 +00 0 +00 0 +00 0 -02 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	B6 - - - - - - - - - - - - -	0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000	C2 - - - - - - - - - - - - -	C3 - - - - - - - - - - - - -	00 2,0 01 2,5 00 0,0 00 0,0 0 1,10 0 0,00 0 0,000 0 0,000	C4 - - - - - - - - - - - - -	D - -2,17E+03 - -2,17E+03 - -9,49E+03 0,00E+00 0,00E+00 0,00E+00 -6,17E+00 -6,17E+00 -6,17E+01 -4,72E-01 0,00E+00 0,00E+00 0,00E+00 0,00E+00 0,00E+00

### 6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production phase (modules A1-A3) contributes between 33% and 67% to the overall results for all the environmental impact assessment categories hereby considered, except for the abiotic depletion potential (ADPE), for which the contribution from the production phase accounts for approx. 98% - this impact category describes the reduction of the global amount of nonrenewable raw materials, therefore, as expected, it is mainly related with the extraction of raw materials (A1).

Within the production phase, the main contribution for all the impact categories is the production of steel and aluminium mainly due to the energy consumption on these processes. These two materials account with approx. 69% to the overall mass of the product,

#### 7. Requisite evidence

Not applicable in this EPD.

ā

therefore, the impacts are in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage.

To reflect the use stage (module B6), the energy consumption was included and it has a major contribution for all the impact assessment categories considered - between 33% and 66%, with the exception of ADPE (2%). This is a result of 6 hours of operation in stand-by mode and 6 hours in on mode per day and per 355 days in a year.

In the end-of-life stage, there are loads and benefits (module D, negative values) considered. The benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

#### 8. References

#### Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

#### General principles

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04 www.bau-umwelt.de

#### PCR Part A

Institut Bauen und Umwelt e.V., Königswinter (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013 www.ibu-epd.de

#### **IBU PCR Part B**

IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Requirements on the EPD for Automatic doors, automatic gates and revolving door systems (version 1.5 04.2017) www.ibuepd.com

#### EN 15804

EN 15804:2012-04: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

#### GaBi 6 2013

GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2013.

#### GaBi 6 2013D

GaBi 6 2013D: Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, Echterdingen, 1992-2013. <u>http://documentation.gabi-software.com/</u>

#### ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

#### ANSI/BHMA A156.10

Power Operated Pedestrian Doors

#### UL 325 ANSI/CAN/UL

Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems

#### UL 60730 UL

Standard for Safety Automatic Electrical Controls

#### NFPA 79

Electrical Standard for Industrial Machinery

#### AHSRAE 90.1 ANSI/ASHRAE/IES Standard 90.1-2016

Energy Standard for Buildings Except Low-Rise Residential Buildings

#### 2012/19/EU

Waste Electrical and Electronic Equipment Directive (WEEE Directive)

Institut Bauen und Umwelt e.V.	<b>Publisher</b> Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	Tel Fax Mail Web	+49 (0)30 3087748-0 +49 (0)30 3087748-29 info@bau-umwelt.com www.ibu-epd.com
Institut Bauen und Umwelt e.V.	<b>Programme holder</b> Institut Bauen und Umwelt e.V. Panoramastr 1 10178 Berlin Germany	Tel Fax Mail Web	+49 (0)30 3087748-0 +49 (0)30 3087748-29 info@bau-umwelt.com www.ibu-epd.com
thinkstep	Author of the Life Cycle Assessment thinkstep AG Hauptstraße 111-113 70771 Leinfelden-Echterdingen Germany	Tel Fax Mail Web	+49 (0)711 341817-0 +49 (0)711 341817-25 info@thinkstep.com www.thinkstep.com.com
ASSA ABLOY	<b>Owner of the Declaration</b> ASSA ABLOY Entrance Systems 1900 Airport Road Monroe, NC 28110 United States	Tel: 1 Fax: ´ Mail: ` Web	-877-SPEC-123 / 1-877-773-2123 I-704-290-5555 specdesk.na.entrance@assaabloy.com www.assaabloyentrance.us

### Annex

Resul	ts sh	own be	elow we	ere cal	culated	d using	TRAC	CI M	lethoo	oloc	gy. E D IN		Δ · Ι			II F N	ΟΤΙ		RFD)
PRODUCT STAGE CONSTRUCTI ON PROCESS STAGE					USE STAGE									END OF LIFE STAGE					FITS AND OADS OND THE YSTEM INDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement <sup>1)</sup>	()	Keturdisnment	Operational energy use	Operational water	nse	De-construction demolition	Transport	Waste processing	Disposal	Reuse-	Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B	4 E	35	B6	E	37	C1	C2	C3	C4	1	D
Х	Х	Х	Х	Х	MND	MND	MND	ΜN	ID M	ND	Х	M	ND	MNE	X	Х	Х		Х
RESL	JLTS	OF TH	IE LCA	۹ - EN	/IRON	MENT	AL IM	PA	CT: C	ne	piece	of a	auto	matic	sliding	door s	yste	m	
Paran	neter	I	Paramet	er	l	Jnit	A1	A3	A4		A5		E	36	C2	C3		C4	D
GW	/P	Global	warming	potential	[kg C	O <sub>2</sub> -Eq.]	1,50E	+03	1,45E	+03	1,97E-	+01 (	0,00	E+00	0,00E+00	1,85E+	+00 6	,81E-01	1,00E+01
OD	P	Depleti	on potent	tial of the	[kg CF	C11-Eq.	] <sup>2,28E</sup>	-06	2,08E	-06	1,00E	-10	0,00	E+00	0,00E+00	9,44E·	-12 4	,96E-10	4,83E-11
A	5	Acidificat	ion poten	tial of lan	id [kg S	02-Eq.]	7,28E	+00	7,05E	+00	1,18E	-01	0,00	E+00	0,00E+00	1,11E·	-02 3	,04E-03	1,37E-02
El	D	Eutrop	hication p	potential	[kg	N-eq.]	3,36E	-01	3,31E	-01	8,34E	-03	0,00	E+00	0,00E+00	7,84E-	-04 1	,29E-04	1,06E-03
Sm	og	Ground-level smog formation			n [kg	O₃-eq.]	8,86E	+01	8,71E	+01	2,43E-	+00	0,00E+00		0,00E+00	2,28E-	-01 2	,75E-02	2,46E-01
Resou	Resources – resources		[	MJ]	1,20E	+03	1,16E	+03	3,92E-	+01	0,00	)E+00 0,00E+00		3,68E+	+00 5	,51E-01	3,02E+00		
DESI					SOLIP		E. On	o ni		fau	tomat	tic sl	lidin	a dog	or eveto	m			
Parameter Parameter			Unit	A1	- A3	A	4	A	5		B6	C2	СЗ		C4	D			
DEI	Renewable primary ener		ergy as	as [MI] 3,10E+(		)E+0	3.		-	-		-	-	-		-	-		
		Rene	energy wable p	carrier rimary er	nergy	[IVIO]	0.00E+0(		0.					-				-	-
PER	KIM	resource Total u	es as ma	aterial ut	ilization	[IVIJ]	3 10	3 10 5 + 03		=+01	3 05E-01		3.08	)8E+03 1.01E+		F+00 2 21F+00		09E±00	-2 17E±03
PEI	RT	Non ron	energy re	esources	5 5	[MJ]	4.00		4	1,07 2+01		0,002 01 0,00						002100	2,172100
PEN	IRE	Non-ren	ewable p energy	carrier	nergy as	[MJ]	۷J] <sup>1,83</sup>		-04 -		-					-		-	-
PEN	PENRM Nor		ewable p naterial (	orimary e utilizatior	nergy as า	[MJ]	0,00	)E+0(	0.	-	-			-	-	-		-	-
PEN	IRT	Total prim	use of n ary ener	on-renev gy resou	wable Irces	[MJ]	1,83	8E+04	4 2,73	E+02	2 3,84E+00		3,99	€+04 2,57E+01		01 1,21E+01		3E+01	-9,49E+03
SI	N	Use	of secon	dary ma	terial	[kg]	5,12	2E+0	1 0,001	E+00	0,00E	+00	0,00	)E+00	0,00E+00	0,00E+	00 0,	,00E+00	0,00E+00
RS	SF	Use of re	enewable	e second	ary fuels	5 [MJ]	0,00	)E+0(	0,00	E+00	0,00E	+00	0,00	)E+00	0,00E+00	0,00E+	00 0,	,00E+00	0,00E+00
NR	SF	Use of n	ion-rene fue	wable se els	condary	[MJ]	0,00	)E+0(	0,00	E+00	0,00E+00 0,0		0,00	)E+00	0,00E+00	0,00E+	00 0,	,00E+00	0,00E+00
F۷	V	Us	e of net	fresh wa	ter	[m³]	9,74	E+0	0 7,57	E-03	3,40E	-02	1,40	)E+01	7,11E-04	5,47E-	03 -6	6,08E-02	-6,17E+00
RESL	ILTS	OF TH	IE LCA	4 – OU	TPUT	FLOW	S AN	D W	AST	E C	ATEG	OR	IES	: One	e piece o	of auto	mati	ic slidin	g door
Param	m eter		Pa	arameter			Unit		1.43		<b>A</b> 4	۵5		B6	C2		3	C4	р
HW	D	H	azardous	s waste o	disposed	1	[kg]	4,0	04E-01	6,22	2E-04 2	2,64E	-04	3,11E-	02 5,85E-	05 1,68	E-03	1,33E-03	1,64E-01
NHV	VD	Non	-hazardo	ous waste	e dispos	ed	[kg]	8,9	92E+01	3,43	3E-02 2	2,94E	-01	1,27E+	01 3,23E-	03 3,91	E-03	1,18E+02	2 -
RW	D	Ra	adioactiv	e waste	disposed	ł	[kg]	9,2	25E-01	3,58	3E-04 2	2,24E	-04	3,28E+	00 3,36E-	05 1,75	E-03	5,59E-04	-4,72E-01
CR	U		Compon	ents for	re-use		[kg]	0,0	00E+00	0,00	E+00	,00E∙	+00	0,00E+	00 0,00E+	-000,001	E+00	0,00E+00	- 0
MF	R		Materia	ls for rec	ycling		[kg]	0,0	00E+00	0,00	)E+008	8,25E∙	+00	0,00E+	000,00E+	-003,821	E+02	0,00E+00	) -
ME	R	Ма	terials fo	or energy	recover	у	[kg]	0,0	00E+00	0,00	)E+000	),00E∙	+00	0,00E+	00 0,00E+	-000,001	E+00	0,00E+00	- 10
EE	E	E	xported	electrica	l energy		[MJ]	0,0	00E+00	0,00	)E+001	,48E·	+01	0,00E+	00 0,00E+	-000,001	E+00	1,40E+01	-
EE	т	E	Exported	energy		[MJ]	[MJ] 0,00E+000,00				,17E∙	+01	0,00E+	000,00E+	-000,001	E+00	3,83E+01	-	